REMARKS

This application has been reviewed in light of the Office Action dated July 23, 2004. Claims 1-4 and 15-28 are presented for examination. Claims 1 and 4, the only claims in independent form, have been amended hereby to clarify the language of those claims, and not to overcome any of the prior-art rejections discussed below. Favorable reconsideration is respectfully requested.

The Office Action states that Claims 1, 3, 4, 27, and 28 are rejected under 35 U.S.C. § 102(a) or (c) as being anticipated by Japanese Patent No. 11-341755 (Takahashi et al.); that Claims 1, 3, 4, 27, and 28 are rejected, in the alternative, under § 103(a) as being unpatentable over Takahashi et al. in view of U.S. Patent No. 4,876,472 (Shiraki et al.); that Claims 2, 15, and 21 are rejected under § 103(a) as being unpatentable over Takahashi et al. and Shiraki et al. in view of U.S. Patent No. 5,121,021 (Ward); that Claims 16 and 22 are rejected under § 103(a) as being unpatentable over Takahashi et al., Shiraki et al., and Ward in view of U.S. Patent No. 5,304,885 (Wong et al.); that Claims 17-19 and 23-25 are rejected under § 103(a) as being unpatentable over Takahashi et al., Shiraki et al., and Ward in view of U.S. Patent No. 3,095,515 (Case et al.); and that Claims 20 and 26 are rejected under § 103(a) as being unpatentable over Takahashi et al., Shiraki et al., and Ward in view of U.S. Patent No. 5,949,172 (Katagiri).

Applicants respectfully traverse the above rejections and submit that independent Claims 1 and 4, together with the claims dependent therefrom, are patentably distinct from Takahashi et al. and Shiraki et al. for at least the following reasons.

Claim 1 is directed to a direct current (DC motor), and Claim 4 is directed to an AC commutator (Universal) motor. Both the DC and the AC motors include a stator with 2P poles, a rotor core, a commutator, and a concentrated winding rotor. In the DC motor, the rotor core includes a core of ferromagnetic material having a number slots S and a number of teeth S separated from a stator core by an airgap, and the commutator includes a number of segments that is greater than the number of rotor slots S.

In the AC motor, the rotor core includes a core of ferromagnetic material having a number of slots S and a number of teeth S separated from a stator core by an airgap. Each pole of the stator includes a coil wound around a tooth of the core of ferromagnetic material, such that the stator and the rotor core form part of a magnetic circuit. The commutator includes a number of segments Z that is bigger than the number of rotor slots S.

One of the notable features of Claims 1 and 4 is that the concentrated winding rotor in each of the DC motor and the AC motor includes a plurality of teeth. Mounted on each tooth is a plurality of simple non-overlapping coils of insulated wire. Each coil is wound around a single tooth only, and each terminal of each coil wound on a tooth is respectively connected to a different segment of the commutator. As discussed in the Response filed on May 10, 2004, this feature eliminates the problem in conventional motors of circulating currents in the windings caused by parallel paths with unequal induced voltages (see page 2 *et seq.* of the specification). The circulating currents cause unwanted heating of the coils and the brushes of the conventional motors, thus reducing their efficiency. With the concentrated winding rotor of Claims 1 and 4, however, the path voltages are balanced, because the coils wound on a single tooth are

distributed in different winding paths. Consequently, circulating currents are avoided.

Takahashi et al. is understood to relate to a technique for arranging concentrated windings or coils in a motor. As shown in Figs. 3-6, for example, Takahashi et al. discloses an arrangement in which two coils (24 and 25) are wound around a tooth (21a, 21c, or 21d).

As discussed in the Response filed on May 10, 2004, Fig. 3 of Takahashi et al. appears to show the coils (24 and 25) wound around the tooth (21d) to be connected to a common commutator segment (4). Similarly, Fig. 4 appears to show the coils (24 and 25) wound around the tooth (21a) to be connected to the same commutator segment (8). Likewise, Fig. 6 shows the coils (24 and 25) connected in series, with one common connection point (2) on the commutator. Consequently, the coils (24 and 25) are part of the same winding path. Such an arrangement is believed to teach away from the concentrated winding rotor of Claims 1 and 4.

The Office Action states that "Applicant's argument that the coils 24 and 25 are connected to a common connection point on the commutator is not persuasive because the claim requires [only] one of the terminals to be connected to a different connection point, not both terminals. The coils 24 and 25 have a terminal connected to different commutator segments, which is clearly met by Takahashi because coil 24 has a terminal connected to commutator segment 9 and coil 25 has a terminal connected to commutator segment 5."

Claims 1 and 4 have been amended to clarify that the concentrated winding rotor has a plurality of teeth, "wherein mounted on each tooth is a plurality of simple non-overlapping coils of insulated wire, with each coil wound around a single tooth only, and wherein each terminal of each coil wound on a tooth is respectively connected to a different segment of the

commutator." As discussed above, Takahashi et al. is understood to teach away from such a feature. Accordingly, Applicants submit that Claims 1 and 4 are not anticipated by Takahashi et al., and respectfully request withdrawal of the rejections under 35 U.S.C. § 102(a) and (c).

Shiraki et al. is understood to relate to a DC motor with non-overlapping windings, and was cited for disclosing permanent magnet stator motors having ferromagnetic cores. However, Shiraki et al. fails to remedy the deficiencies of Takahashi et al. discussed above. That is, Applicants submit that a combination of Takahashi et al. and Shiraki et al., assuming such combination would even be permissible, would fail to teach or suggest the concentrated winding rotor of Claims 1 and 4 discussed above. Accordingly, Applicants submit that Claims 1 and 4 are patentable over Takahashi et al. and Shiraki et al., and respectfully request withdrawal of the rejections under 35 U.S.C. § 103(a).

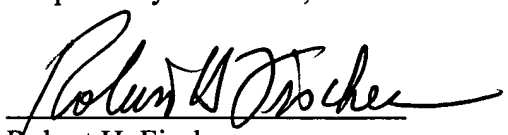
The other rejected claims in this application depend from either Claim 1 or Claim 4 and therefore are submitted to be patentable for at least the reasons discussed above. Because each dependent claim also is deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

CONCLUSION

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



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